

In addition to management of deficient conditions, *VFA.facility* provides budgeting and management tools for facility capital renewal forecasting. Whereas deferred maintenance is concerned with existing conditions, capital renewal forecasting is concerned with the continuous deterioration of buildings. From an accounting perspective, this is the cause for building depreciation. This section presents the findings of the capital renewal forecasting for the Kentucky State University-Frankfort building that makes up this report.

Unlike the theoretical straight-line depreciation familiar to accountants, building deterioration occurs at a wide variety of rates for various building systems. As such, VFA has developed a methodology for predicting building deterioration and associated capital renewal funding requirements based on systematic analyses of the building's components, estimating renewal costs at the end of each component's useful life. In a typical assessment, each building system is modeled with a value represented as its percent of the total replacement cost of the facility, a lifetime, a percentage of the system to be replaced at the end of its lifetime and a percent through its lifetime. The extent of detail shown represents VFA's standard approach; however, this listing is intended to be flexible, adjusting to each client's needs. Addition of more detail is not limited by the system.

Component Lifetime

Component lifetimes represent the anticipated serviceable duration of each building component. Lifetimes reflect the durability of the type of system present. For example, typical EPDM roofing has a standard lifetime of 20 years, while slate shingle roofing has a serviceable life of 50 to 100 years depending on the thickness and construction method used. As such, each component is analyzed and a life assigned. These figures are based on published standards as modified by VFA to reflect our professional experience. The lifetimes are further refined to reflect the owner's experience and approach to preventative maintenance as well as expected or historic wear on the buildings.

Percentage Replaced

At the time of renewal, many components are only partially renewed / replaced. For example, while a roof is generally totally replaced at the end of its life, elevators are not totally replaced, but have significant residual value. The shaft, piston, doors, etc. generally remain but the cab and electronics are replaced.

Percent Used

For each component, VFA professionals estimate the percent depletion relative to its lifetime. Field inspection results are used to determine the percent used, not simply the age of the component.

The following graph illustrates the results of the facilities renewal forecast process for the Kentucky State University-Frankfort. VFA estimates the average capital renewal requirements over a twenty-year period to be \$1,770,279 in current year dollars not inflated. The annual costs associated with replacement of systems not currently deficient but anticipated to fail in the future are mapped to the graph. The time frame used was 20 years. Additional analyses can be produced with other time-frames. The profile of associated annual spending is non-linear as evidenced by three “waves” as indicated on the Facility Renewal Forecast graph. Based on systems reaching the end of their expected lifecycles, capital expenditures peak in years 2006, 2017, 2023 and 2026.

The results of this analysis are used in combination with the data collected on current deficiencies to produce the financial models presented and described in the next section, Funding Scenario Analyses.